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ABSTRACT

A study examined present agricultural education programs in Saint Lucia and made recommendations for needed improvements. Data for the evauation were obtained from numerous documents and publications, field trips, and discussions with key officials in various ministries and institutions, including the Ministry of Agriculture, Ministry of Education, and the Saint Lucia College of Agriculture. The existing shortage of appropriately trained agriculturalists in Saint Lucia sorely limits the possibility of the further development of agriculture in the country. Strengthening the country's program to prepare agricultural education teachers and improving agricultural and general training at the primary and secondary levels are crucial to the country's development. To accomplish this, the Ministry of Education should have at least one staff member specifically assigned the responsibility of administering and supervising agricultural education. Moreover, two persons should be assigned the task of coordinating agricultural programs in the primary and secondary schools. More and better prepared agriculture teachers are needed at all levels, and periodic studies (occurring at least every 3 years) should be conducted to determine the occupational attainments of graduates of agriculture programs. (Appendixes to this report include a listing of documents reviewed by the researcher, data on present staffing and training needs in Saint Lucia, and a brochure detailing a Michigan State University-sponsored overseas study program dealing with agricultural development and education in Taiwan.) (MN)

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"...a country which is unable to develop the skills and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else."

Human Resources as the Wealth of Nations, p. 3

Drafted October 1984
Revised April, 1985

DEVELOPMENT AND STRENGTHENING OF AGRICULTURAL EDUCATION IN ST. LUCIA

Introduction

The consultant was asked to determine the needs for improving agricultural education and to make recommendations to achieve those improvements. The assignment included the period October 14-21, with five work days.

The report contains some general information about the nature of agricultural education, the major sources of information, observations, recommendations and some comments regarding implementation.

The Nature of Agricultural Education

Agricultural education is conducted in many forms and under various administrative arrangements. Always it is education whose subject matter deals with agriculture, agriculture in the broad context of farming, the farm, and the related services and support activities. It is more than studying about agriculture and more than learning how to grow crops and livestock. A study about agriculture is appropriate as a part of history and other areas of social science. Agricultural education provides students the opportunity to know how and to understand why regarding crops, livestock, machinery, and management. It includes learning how to market the products as well as to understand the marketing processes. Finally, it

includes the development of abilities needed to provide leadership and to cooperate for the strength of agriculture.

The various forms of agricultural education have their objectives which may range from general to specific; from avocational to vocational to technical and professional; from interests and attitudes to knowledge and psycho-motor skills. The objectives sometimes may focus more on principles and at other times may be focused on the applications of both principles and practices.

Agricultural education has its roots in both agriculture and education. It is a part of formal and nonformal education; it is conducted in schools as part of organized courses and curricula; it is conducted on farms in workshops organized by Extension Agents; and by the farmer who teaches his children or his neighbours; and it may be conducted at all levels of schooling: primary, secondary and tertiary.

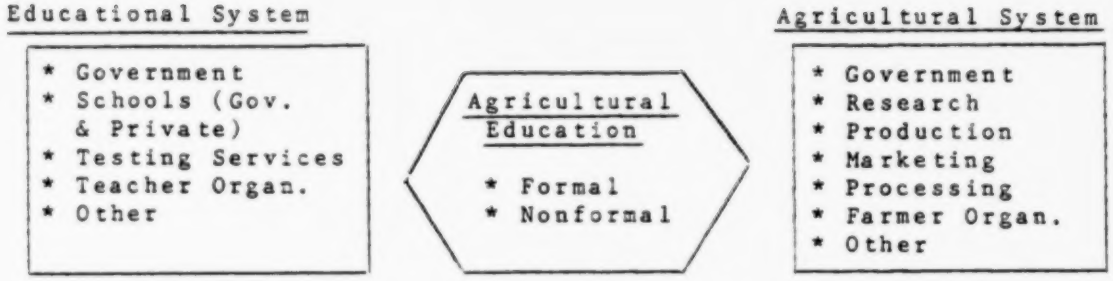
The major purposes of agricultural education are to contribute to or help satisfy the needs of society and the needs of individuals. For society, agricultural education is important to help achieve the goals of food production, marketing and processing and the wise use of natural resources. It is a means of helping the general population understand the importance of the agricultural-sector to the well-being of the nation.

For the individual, agricultural education is important as a means to achieve goals for personal and career development. It helps the young man or woman to enter and advance in farming or other agricultural occupations. It helps them achieve

satisfaction from life. Agricultural education is a part of the means for achieving development of human resources which are essential to achieving the goals of increased agricultural productivity and improved livelihood of rural people.

Much of formal education in agriculture is under the jurisdiction of the ministry of education. In St. Lucia the Ministry of Education has direct administration of agricultural education in the primary and secondary schools as well as any agricultural education included in the teachers college. However, the St. Lucia College of Agriculture is under the jurisdiction of the Ministry of Agriculture with the certificates and diplomas issued jointly with the Ministry of Education. The nonformal agricultural education programme conducted by the extension service is under the jurisdiction of the Ministry of Agriculture.

Agricultural education programmes have linkage with both the educational system and agricultural system within a nation. In a simplistic sense, the educational and agricultural systems may be visualized as follows with the agricultural education programmes having an interface with both systems even though the jurisdiction for programmes is clearly divided to the separate ministries. The agricultural education programme has sometimes been described (Coombs and Ahmed, 1974) as being separated or segregated from other fields of learning: institutionally, professionally and organizationally. The



reasons for this separation are usually rooted in historical events; but the consequences are readily observable. The education ministries have no formal linkages with the agricultural ministries for sharing in the development and implementation of policies and programmes in agriculture. The teacher training colleges usually are separated from the research and knowledge-generating activities in agriculture. Consequently, the teachers are often trained by persons with no current knowledge in agriculture (or sometimes by persons with no formal training in agriculture). The farmer training schools, public schools, information centers and other knowledge utilizing institutions have generally emerged with no real linkages or interface with the knowledge-generating institutions. Their separate or segregated components, within an agricultural education system, have been described by Coombs and Ahmed as follows:

> "Created in piecemeal fashion, the elements of the system continue to operate piecemeal, an outcome largely of the division of jurisdiction among different ministries (and different international agencies and their subdivisions) over the various parts of the system. There is no one locus of responsibility for viewing the system as a whole, for planning its future and keeping its parts in reasonable balance, or for monitoring its overall performance in relation to its mission and taking initiatives to improve it." (p. 239)

Agricultural education is part of both the formal educational system in a country and it is part of the agricultural system. The linkages to both systems must be strong to have a viable agricultural education programme. In other words, the primary schools and secondary schools must have effective basic education programmes as a prerequisite to a strong agricultural education programme. The teachers of agriculture must be experienced in farming and have access to the dynamics of everyday affairs in agriculture. Farmers who do an outstanding job of producing crops and livestock must be able to show a reasonable profit from the marketing of those products. If the policies of the nation place a high priority on improvements in the agricultural sector, the subsequent practices must reflect that priority. In other words, if the schooling system is strong in its teaching of science, the agricultural education programme is more likely to be effective. If the policies and practices related to agriculture support increased utilization of trained people, if persons working in the agricultural sector receive rewards comparable to other sectors, the agricultural education programme is more likely to be effective.

Sources of Information

The following comments are based on discussions and observations. Discussions were held with key persons in both the Ministry of Agriculture and Ministry of Education. In addition, an extended discussion was held with the Principal and Deputy

Principal of the Union College of Agriculture (St. Lucia College of Agriculture). Finally, there were discussions with one primary school teacher of agriculture now on leave for study at the College of Agriculture, two teachers of agriculture at a senior primary school, one teacher at a secondary school, and one local extension agent.

Several publications and documents were made available for review. The following is a partial, short list. For a more complete listing the reader is referred to Appendix A.

1. "National Improvement Plan for Agriculture, 1985-88."
2. Proposal for Re-siting and Re-establishing of the St. Lucia College of Agriculture, September 1984.
3. "Agricultural Programmes for (St. Lucia) Schools, September 1983-July 1988."
4. Training Needs in Agriculture in the Leeward and Windward Islands, 1983.
5. Trained Manpower Needs in the Agricultural Sector Leeward and Windward Islands, 1976.
6. The St. Lucian Farmer, Issue No. 2, June/July, 1984/1985.

Some General Information about St. Lucia secured from standard references included:

Year of Independence	1979
Area: square miles	238
(square kilometers)	(616)
Population	125,000
GNP per capita (1982), U.S. $	$720
Agriculture as % of GDP (1981)	12.3
Major agricultural export	Bananas

Observations

The interest in and concern for the agricultural education programmes in St. Lucia were readily evident from the very first interview which was held. There was concern for an adequate supply of willing and able agriculturalists for implementing the plans for agricultural development. In addition there were concerns expressed for strengthening the instructional programmes in primary and secondary schools as well as at the technical or college level. The observations have been summarized under two major headings: Ministry of Agriculture and Ministry of Education.

Ministry of Agriculture. The Ministry of Agriculture provides leadership and supervision for agricultural programmes including tree crops, livestock, land resources, agricultural credit and others.

1. The National Improvement Plan for Agriculture, 1985-88 is indicative of the dynamic nature of agriculture and the high level of concern for systematic development of the agricultural sector.
2. The manpower needs for the next three years for the Ministry of Agriculture include 33 diploma level persons, two graduates, and 11 post graduates. (The annual need according to the Edmunds report, for the next three years is 13 graduate level persons and 30 intermediate level persons. See Appendix B.)

3. Two on-going major agricultural development projects are the "Agricultural Structural Adjustment Project (USAID)" and "Small Farmers Development Project (IFAD/CDB)." Some other projects include tree crop diversification, livestock production, and agro-processing.

4. The Union Agricultural College (St. Lucia College of Agriculture) is viewed as essential to the preparation of agricultural manpower for St. Lucia. Detailed planning has taken place as a means of making major changes in the College as follows:

   a. Upgrade it to an accredited Diploma Level Programme;

   b. Re-site the college to a 50-acre site where more appropriate land is available for crop and livestock production;

   c. Make the college a residential college in order to provide students with more realistic experiences;

   d. Continue both the young farmer curriculum and the technician curriculum but separate the groups for their theory instruction;

   e. Keep the entrance requirements the same as now;

   f. Drastically change the curriculum so as to put more emphasis on the business of farming and farm management;

g. Conduct some short courses for farmers;

h. Have a core faculty consisting of four lecturers and utilize part-time lecturers for some courses;

i. Change the statutory nature of the College but retain it within the Ministry of Agriculture; and

j. Strengthen the linkage with agro-business to prepare technicians to meet the private sector needs.

4. Within the Ministry of Agriculture, there is need for some way to coordinate the many training and educational programmes at the technical level so as to best utilize the limited resources.

5. The National Improvement Plan for Agriculture calls for collaboration with the Ministry of Education and Culture in several areas including:

   a. assistance with school gardens and with in-service training of agricultural teachers;

   b. providing technical training in agriculture in the St. Lucia College of Agriculture; and

   c. adult literacy programmes in rural areas.

6. The National Improvement Plan for Agriculture calls for collaboration with the Ministry of Community Development, Social Affairs, Youth and Sports in several areas including:

   a. Community development; and

   b. Youth skills training program.

7. The Ministry of Agriculture attempts to provide coordination among non-government agriculturally related organizations. They are numerous in St. Lucia as shown below, and require considerable man-hours for effective coordination.

a. Local organizations

1) St. Lucia Banana Growers Association
2) Coconut Growers Association
3) St. Lucia Agriculturalist Association
4) St. Lucia Marketing Board
5) National Development Corporation
6) St. Lucia Development Bank
7) National Farmers Welfare Association
8) National Research and Development Foundation
9) St. Lucia Save the Children Fund
10) St. Lucia Association of Farmer Cooperatives
11) National Association of Fishermens' Cooperatives
12) St. Lucia Cooperative League
13) Environmental Commission

b. Sub-regional

1) Windward Islands Banana Growers Association (WINBAN)
2) Organization of Eastern Caribbean States (O.E.C.S.)

c. Regional

1) Caribbean Community (CARICOM)
2) Caribbean Agricultural Extension Project (CAEP)
3) Caribbean Agricultural Research and Development Institute (CARDI)
4) Caribbean Agricultural and Rural Development Advisory and Training Services (CARDATS)
5) Women and Development (WAND)
6) Caribbean Food Cooperative (CFC)
7) University of the West Indies (UWI)
8) Caribbean Food and Nutrition Institute (CFNI)

d. International Agencies

1) International Fund for Agricultural Development (IFAD)

2) Food and Agricultural Organization (FAO)
3) United States Agency for International Development (USAID)
4) Canadian International Development Agency (CIDA)
5) British Development Division (BDD)
6) Inter-American Institute for Cooperation on Agriculture (IICA)
7) European Development Fund (EDF)
8) French Technical Cooperation
9) Organization of American States (OAS)

8. The nonformal agricultural (extension) education program is being strengthened through assistance from the Caribbean Agricultural Extension Project (CAEP).

9. A visit to the proposed site for the relocation of the St. Lucia College of Agriculture showed that the site has an excellent road for access; telephone and electric wires are available; and water is available. The site includes a small watershed, bounded on one corner by a flowing stream. (It is a small part of a very large former estate which is being subdivided for distribution to growers.)

10. A serial, The St. Lucian Farmer, is produced and distributed by the Agricultural Communications Unit within the Ministry of Agriculture. One issue was reviewed and found to contain articles dealing with forests and erosion; the need for research regarding fisheries; some practices for rehabilitation of cocoa production; the nature and control measures for the fruit fly; practices for establishing and maintaining "forage banks"; and nutrition units.

Ministry of Education. The Ministry of Education provides both leadership and supervision for the formal agricultural education programs. Other observations included:

1. One person within the Ministry of Education is assigned responsibility for leadership and supervision for the agricultural education programme.
2. There is a great shortage of teachers of agriculture. The current need is for approximately 40 teachers at the primary school level, and at least five for junior secondary schools.
3. Scholarships are needed to provide diploma level training for agricultural teachers.
4. Instructional materials are needed for the agricultural teachers: student references, teacher references, and other forms of instructional resources.
5. School land for laboratories lack fencing to provide security.
6. Instruction in schools appears to be bookish, and not closely related to good practices in farming.
7. Some secondary schools lack the facilities and other resources to teach the CXC agricultural syllabus.
8. The adult literacy programme was reported to lack materials related to agriculture for use with adults in rural areas.

9. In-service Programmes are needed to help teachers improve on-the-job. This includes both technical and professional trainings.

10. The linkage with the Ministry of Agriculture are weak or non-existent in the three areas of preparing teachers, adult literacy programmes and in-service for agricultural teachers.

11. Extension officers (from the Ministry of Agriculture do give some assistance to the schools: school visits; school visits are related to the needs identified by the principal; and sometimes plans for propagation.

12. Two agricultural projects have been promoted by selected schools: rabbits and cassava.

13. Assistance has been sought from CIDA for funds to strengthen programmes in secondary schools.

14. The five-year plan (1983-1988) for strengthening the agricultural education programme, prepared by the MOE, included the following kinds of information:

    a. Objectives for the improvement, such as

        - greater community involvement
        - linkage between the schools and agricultural organizations
        - include agriculture in the common and
        - middle school examinations
        - conduct workshops for teacher training plus development for instructional materials
        - and others

    b. Schools which conduct agricultural instructions

Level of schools	Actively Engaged in Teach. Agr.	Some Form. of Agr.	No Agr.
Senior Secondary	3	1	1
Junior Secondary	4	8	1
Primary	25	-	20
Total	32	9	22

c. A proposal to form an "Agricultural Advisory Board" consisting of junior and secondary school teachers plus an extension officer from the MOA.

d. A proposal to strengthen the supervision of the schools through a schedule of regular, periodic visits.

e. And several other proposed activities.

Recommendations

It is essential to strengthen the agricultural education programmes in St. Lucia. The shortage of appropriately prepared agriculturalists is a limiting factor for the further development of agriculture. In fact, the strengthening of the primary and secondary levels of schooling, in general, is necessary as a key to human resource development. And human resource development is considered a precursor to economic and social development. The strengthening of the teaching of agriculture in the primary schools, in the secondary schools and in the St. Lucia College of Agriculture is essential. Recommendations regarding the various levels of agricultural education are given below. The recommendations are separated into two general areas, according to government ministry.

Ministry of Education. The Ministry of Education is commended for having a plan for strengthening agricultural education and for having a staff member specifically assigned responsibility for administration and supervision of agricultural education.

1. There should be two persons to coordinate and supervise the agricultural education programmes in the primary and secondary schools.
2. Their job descriptions should include planning and coordinating...
   a. an in-service programme for teachers of agriculture;
   b. the development and distribution of appropriate instructional materials;
   c. liaison with the Ministry of Agriculture and other agricultural organizations and agencies;
   d. supervision of instruction, facilities and equipment at the local schools;
   e. preparation of an annual report of accomplishments and an annual plan for the agricultural education programme; and
   f. the work of an agricultural education advisory committee.
3. Additional teachers of agriculture should be prepared for both the primary and secondary schools.

4. Periodically, at least every three years, a follow-up study should be conducted to determine the occupational and educational attainments of students who have studied agriculture.

5. Primary Schools

   a. The development of the curriculum is needed so that agriculture is not only taught as a separate course but equally as important, the agricultural environment of the school community should be used as a means of teaching science and should be a part of other courses. This means that agriculture should be a part of basic education, not as a vocational subject in Standard I through V.

   b. The school gardens should be developed from the point of view of improving nutrition, demonstrating principles of science through plants and animals, and stimulating positive interests of students in agriculture. This will include a need to provide security around the garden areas.

   c. Teachers should help develop appropriate instructional materials for teaching agriculture in primary schools.

   d. The primary school facilities, especially the agricultural materials, should be jointly utilized with the adult literacy programme.

6. Secondary schools

   a. An in-service programme should be planned and conducted on a continuing basis to--

      a. keep the teachers technically competent;
      b. develop appropriate instructional materials;
      c. help teachers share materials; and
      d. revise and update the curriculum.

   b. Emphasis should be placed on student projects, either on school land or at home. The projects should provide students the opportunity for planning and managing from production through marketing so as to help students learn the commercial aspects of agriculture. Record keeping and analysis should be an important part of the instruction.

   c. Development of student leadership abilities in agriculture and their sense of community service as good citizens should be integrated into the agricultural instruction.

   d. Schools should have the essential materials and equipment for teaching vocational agriculture with modern practices so that farmers may learn through their sons and daughters.

   e. The school facilities should be utilized for farmer education in cooperation with the agricultural extension service.

f. The objective of agricultural instruction offered to secondary-level students enrolled in primary schools should be vocational education.

Ministry of Agriculture. The Ministry should be commended for the work being done to strengthen the agricultural programmes. The presence of a long-range plan for agricultural development, the replanning for the College of Agriculture and the strengthening of the extension education programme (in cooperation with the Caribbean Agricultural Extension Project) are three specific examples of the work being done. The following are recommendations for consideration by the Ministry.

1. A study should be initiated to determine alternative ways to achieve an improved coordination of the many training and educational programmes within the Ministry so as to maximize the use of limited resources and at the same time avoid unnecessary duplications of equipment, training sessions, etc.
2. Designate persons and the lines of responsibility for coordination with the agricultural education programme and adult literacy programmes in the Ministry of Education.
3. The St. Lucia College of Agriculture
   a. The administration of the College should be continued through the Ministry of Agriculture but with provisions for cooperation with the Ministry

of Education. (There may be mutual benefits, not only from the preparation of teachers of agriculture but from the standpoint of accreditation, staffing and the availability of special courses from the technical college.)

b. The resiting of the Institution and the restructuring of the curriculum are essential as part of the process to develop a Diploma Level Technical Programme in agriculture. (Such a programme is essential to the further development of agriculture in St. Lucia through preparation of agriculturalists who are WILLING and ABLE to work in agriculture in St. Lucia.)

c. The objectives of the College of Agriculture should include the preparation of technicians for service in government and the private sector, teachers of agriculture, and persons who may want to enter directly into farming.

d. A core of four full-time, permanently assigned faculty to teach at the College is essential.

e. A planned programme should be conducted to help the lecturers, both full-time and part-time, develop course outlines and instructional plans consistent with the philosophy and objectives of the revised curriculum.

f. The revision of the curriculum for the Diploma students should not only place a new emphasis on the business of farming and farm management but should help the students develop the concepts of family, farm and community as they relate to agricultural development. The curriculum should include courses and experiences for leadership development.

g. The proposed curriculum for the students expected to enter farming (now the 1-year certificate programme but currently planned as a 2-year certificate programme) should be revised and alternative models considered. Special attention should be given to appropriate criteria for entering students (age and prior farming experience in particular); and appropriate length and organization of training (perhaps one year residence followed by two years of short courses while they are actually engaged in farming on their own land or on commercial farms).

h. Additional information should be gathered from a representative sample of employers who are in the private sector of agriculture and agri-business to determine the competencies required for their new

employees, the potential for internships and scholarships for students, and their plans for expansion etc.

i. Periodically, a follow-up study should be conducted to determine the occupational and educational attainments of the students who studied agriculture.

Implementation

The strengthening of the agricultural education programmes in St. Lucia will require a plan with priorities which becomes a guide for the concerted action by both the Ministry of Agriculture and the Ministry of Education. A key to the success of any plan will be the development of leadership personnel. Part of this can be done through wise use of consultant services. In other instances it will be necessary to send selected persons abroad for additional education. The following are some of the key points to be considered.

Ministry of Agriculture. The Ministry has already demonstrated the desire and ability to develop plans. Three main areas have been targeted as part of the strategy for further development of agricultural education programmes.

1. Seek consultant services to assist with the development of alternative models for coordination of education and training programmes in the Ministry of Agriculture.

2. Seek a scholarship to permit an administrator to participate in a 6-week study tour to observe the relationships of agricultural development and education. (See Appendix C for a brochure Taiwan Agricultural Development and Education, July 8-August 15, 1985)

3. The St. Lucia College of Agriculture, already identified as a priority for strengthening, should be the recipient of additional support for staff development, curriculum revision, and development of facilities and purchase of equipment.

   a. The Caribbean Agricultural Extension Project should be requested to sponsor a region-wide workshop for administrators and lecturers in technical agriculture programmes. The workshop would provide for the sharing of programme plans, instructional materials, etc.

   b. Seek scholarships for graduate training of at least three lecturers; and scholarships for the administrators to observe (6-8 weeks) administration/curriculum/policies in technical/community colleges with outstanding agricultural programmes. One administrator should focus on overall administration and curriculum development; and the other administrator should

focus on personnel development and effective teaching.

c. The request for financial support for the development of facilities and purchase of equipment should be preceded by the further refinements in the curriculum. Special attention should be given to the proposed program for preparing farmers--the certificate programme. A more innovative programme is desired to attract outside funding agencies.

Ministry of Education. The Ministry is requested to consider the development of a more comprehensive plan for agricultural education as a first step for strengthening the agricultural education programme. The present plan is an excellent beginning. The more comprehensive plan should include provisions for coordination with the Ministry of Agriculture; personnel development (pre-service, in-service instructional materials, and research); supervision and administration in primary and secondary schools; facilities, equipment, and land; curriculum review and revision; school-community relations; and programme evaluation. Such a plan should contain goals and timetables for development.

The overall plan could then be considered for implementation through several phases or stages. An early stage should focus on human resource development followed by funding for materials,

equipment and facilities. The personnel development (human resource development) in Phase I could include:

1. A scholarship to provide graduate training (B.Sc.) for one agricultural education supervisor.
2. Scholarships to assist with the training of teachers of agriculture within St. Lucia for teaching agriculture in primary and secondary schools.
3. A scholarship to permit an administrator to participate in a 6-7 week study tour to observe the relationships of agricultural development and education. (See above, Ministry of Agriculture, number 2. It is desireable to have the two persons participate in the same study tour.
4. Scholarships are needed for selected teachers of agriculture from the secondary schools to observe vocational agriculture student projects and local programmes of Future Farmers of America; and an annual conference for updating vocational agriculture teachers. (4-6 weeks)

Consultant services will probably be needed to assist with the development of the overall plan. The consultant could provide additional services, such as:

1. To plan pilot programmes at two or three schools to demonstrate the development and use of appropriate facilities, equipment, instructional aids, school and home projects, and community involvement.

2. To assist with planning in-service programmes for primary and secondary school teachers of agriculture during holiday periods. The in-service programmes could include up-dating in technical agriculture, instructional methods, and development of instructional materials.

Financial support is required for purchase of equipment, fencing to secure land laboratories, and to build facilities for seed, feed, fertilizers and chemicals. It would be appropriate to plan for a small scale beginning through two or three pilot schools, carefully selected for their geographical location with respect to agricultural production. These could be developed with attention to improved instructional methods, community involvement, cooperative relationships with the agricultural extension programmes, and other adult education. Later, they could be used as sites for in-service training for other teachers of agriculture.

APPENDIX A

Sources of Information

1. "National Improvement Plan for Agriculture, 1985-88," by the Ministry of Agriculture, Fisheries, Forestry and Cooperatives, Department of Agriculture, 68 pp. (mimeographed).

2. "Proposal for Re-siting and Re-establishing of the Saint Lucia College of Agriculture, September 1984," by Albert St. Clair and Marie-Louise Reid, 42 pp. plus appendices (mimeographed) and supplement, pp. 42-92.

3. "Agricultural Programmes for (St. Lucia) Schools, September 1983-July 1988," by Agapitus Dolcy, Agricultural Education Specialist, Ministry of Education, Castries, St. Lucia, 22 pp. (mimeographed).

4. Human Resources as the Wealth of Nations by Frederick H. Harbison, Oxford University Press, New York, 1973, 173 pp.

5. Interviews and discussions with officials in Ministry of Education, Ministry of Agriculture, St. Lucia College of Agriculture, principal at one junior secondary school, three teachers of agriculture, one college student (a primary school agricultural teacher on study leave) and one local agricultural extension agent.

6. Attacking Rural Poverty: How Nonformal Education Can Help by Philip H. Coombs with Manzoor, The John Hopkins University Press, Baltimore, 1974, 292 pp.

7. "The Windward Islands and Leeward Islands Agricultural College Study," Phase I--Report to the Caribbean Community Secretariat/Government of St. Lucia by Triad Architects Planners, 9 Tufton Street, London SW1P 3QB in Association with Landell Mills Associates Ltd., Columbus House, Trossachs Drive, Bath BA2 6RR, January 3, 1984, 25 pp.

8. Trained Manpower Needs in the Agricultural Sector Leeward and Windward Islands by T.H. Henderson. St. Augustine, Trinidad: The University of the West Indies, Department of Agricultural Extension, 1976, 59 pp.

9. "Training Needs in Agriculture in the Leeward and Windward Islands" by J.E. Edmunds. A report to the CIDA/Canada Training Awards Project Coordinator, June 1983, 53 pp. + appendix (7 pp.)

APPENDIX B

Present Staffing and Training Needs in St. Lucia:
A Comparison of Two Studies...1974-75 and 1983

Henderson Study...Data Collected December 1974-April 1975		Edmunds Study...Data Collected February-May, 1983	
Present Staff Resources:		Staff in Post:	
Graduate	17	29	Graduate
Intermediate	33	46	Local Trained
Untrained	104	49	Overseas Trained
Vacancies:		Vacancies:	
Graduate	8	16	Graduate
Intermediate	46	38	Intermediate
Projected Total 10-Yr Needs:		Projected 3-Yr Training Needs:	
Graduate	56	39	Graduate
Intermediate	210	89	Intermediate

Sources: Trained Manpower Needs in the Agriculture Sector Leeward and Windward Islands, by T.H. Henderson, p. 56.

Training Needs in Agriculture in the Leeward and Windward Islands, by J.E. Edmunds.

Comments: The Henderson study included the staffing and needs by the Ministry of Education. The Edmunds study did not include the Ministry of Education. On a per year basis the needs had nearly doubled between the two studies: 26.6 per year compared with 42.7 per year. If one considers the absence of teachers in the Edmunds study, than it is very obvious that the trend is toward greater problems rather than a resolution of problems.

APPENDIX C

Taiwan

Agricultural Development and Education

July 8-August 15, 1985

Michigan State University
Department of Agricultural and Extension Education

Arranged through the
Office of Overseas Study,
Lifelong Education Programs

Program Costs

The approximate cost of the program exclusive of transportation is $1308. This figure includes tuition, overseas program fees, field trips, lodging and breakfast. Local transportation costs and personal expenses are extra, as are most meals. Lunches are available at the university student cafeteria. Evening meals are available in both Western and Chinese style at the hostel and at a variety of restaurants. Course administrators will assist students with round-trip charter flight arrangements, but travel is basically an individual matter. Out-of-state students pay only $60 per credit.

Airfare rates from Detroit to Taipei and return, as of August 1, 1984, were quoted at $1100 to $1310.

Airfare rates, program costs and arrangements are subject to change.

Pre-trip Orientation

A two-day orientation session one weekend in May will provide travel information and cultural orientation. Additional material will be available at that time regarding reading assignments and the research paper.

Instructor

Dr. O. Donald Meaders, professor of agricultural and extension education at Michigan State University, has studied agricultural institutions and development in Taiwan for the past 20 years. He was a visiting professor at National Chung Hsing University in 1968 and 1975. He has directed three research projects in Taiwan in cooperation with professors at National Chung Hsing University and officials from such organizations as the Ministry of Education, the Provincial Department of Agriculture and Forestry, and the Council for Agricultural Planning and Development.

Financial Assistance

Since this program is an integral part of MSU's activities, financial assistance to students is available under usual MSU arrangements. Financial aid recipients are required to identify themselves to Office of Overseas Study staff upon application to a study program. Appropriate arrangements must be made to apply student financial aid to overseas study programs. Overseas scholarships are available to qualified students.

Academic Program

The course is designed for advanced undergraduates, graduate students and others interested in food and poverty problems of the developing world. Student participation from other universities is welcome and encouraged. The program is limited to 30 persons. Senior level undergraduate or graduate status is required for academic credit. Approval of the Department of Agricultural and Extension Education is required to participate on a non-credit basis. Seven term credits (equivalent to five semester credits) may be earned.

The courses are:

AEE 802 (3 credits):
Agricultural Education and Rural Development

or

AEE 483 (3 credits):
Readings and Independent Study in Agricultural and Extension Education

ANR 475 (4 credits):
Research paper based on readings, observations and other individual study. To be approved by the instructor.

Students will attend class sessions, participate in field trips, prepare a research paper and have a take-home exam based on study questions given out at the first session in Taiwan. Readings will include the following along with additional sources to be identified later:

Meaders, O. Donald and Hu Chi-ho. **An Evaluation of Taiwan Vocational and Technical Education Programs in Agriculture,** East Lansing, Michigan: Michigan State University, Department of Secondary Education and Curriculum, October, 1977, 157 pp.

Tsurumi, E. Patricia. **Japanese Colonial Education in Taiwan, 1895-1945.** Cambridge, Massachusetts: Harvard University Press, 1977, 334 pp.

The research paper assignment will ask students to study some aspect of the agricultural education system in Taiwan such as the Farmer's Association, Extension system or Agricultural College programs, and to describe the linkages between that program and agricultural development. Topics should be tentatively selected prior to departure. The best papers will be considered for publication.

Several field trips will be made to observe agricultural research, crop and livestock production practices, marketing arrangements, mechanization and other aspects of agricultural development. Key resource persons will also make classroom presentations.

All students will be required to do preliminary reading on Taiwan's history, location, climate, agriculture and education system.

Highlights of the Proposed Itinerary

July 8-16	Monday departure from USA with Tuesday night arrival in Taipei. Orientation briefings on agriculture, education, religions and history. Field trips to botanical garden, National Palace Museum, Lungshan temple, Chiang kai-Shek Memorial Hall and Sun Yat-Sen Memorial Hall. Briefings on land reform, agricultural planning and "group farming" with visits to Taoyuan Irrigation Association, Shihmen Reservoir, and National Taiwan Institute of Technology.
July 17	Travel by bus to Tsengchin Lake near the port city of Kaohsiung with a stop at Lungchin Township near Taichung to observe results of land consolidation program.
July 18-22	Field trips and discussions to learn about the three levels of Taiwan's educational system—technical, vocational and primary education. Visits will be made to specialized farming operations for swine, rice and fish as well as to the supporting services of Farmer Associations.
July 23	Visit a vocational agricultural and industrial school enroute to Tainan. Opportunity to see historic Tainan and Anping, the headquarters for the Dutch more than 300 years ago.
July 24-25	Visits to research stations for crops and livestock plus the Asian Vegetable Research and Development Center. See an integrated crop-fish-livestock project and observe farmers market for vegetables. Visit the Kukan Farmers Association to observe bamboo production, marketing and processing enroute to Taichung.

July 26-August 11	Modern National Chung Hsing University will be our headquarters in Taichung. Briefings and field trips will include higher education in agriculture, operations of the PFA (Provincial Farmers Association), research program of the Plant Protection Center, education in Taiwan with emphasis on vocational education and a visit to the Yunlin Senior Vocatioal Agriculture school. A field trip to see the project known as "We Love Our Village." **Two nights with a Chinese family for each program participant.**
August 12	Travel by bus to Taipei.
August 13-14	Debriefing, including questions and answers with the Chairman of CAPD (Council for Agricultural Planning and Development), final examination and shopping in Taipei.
August 15	Departure from Taiwan.

Location

An exciting, unique opportunity awaits you in the Orient. For five weeks this summer Michigan State University's College of Agriculture and Natural Resources will host an Asian excursion to study agriculture, education and development in Taiwan.

Taiwan, a subtropical island in the Pacific Ocean, just off the coast of mainland China, provides an excellent opportunity for learning firsthand about agriculture, education and development. Together with economic, industrial and social improvements, Taiwan's agricultural development represents one of the truly great success stories in a period when food deficits and poverty are increasing in most of the developing world. Land reform in Taiwan's land-to-tiller program is ranked among the most successful anywhere since World War II.

Participants will fly into the capital city, Taipei, to begin their study. The group will be located at three additional sites (Pingtung, Tainan and Taichung) for field trips and lectures. Housing will be in hostels and transportation will be provided by bus. Classes will be held five days a week, allowing students free time on weekends to visit sites or travel. One of the weekends will be used for living with a Chinese family.

Besides studying Taiwan's agriculture and education, participants will also become submerged in the culture and lifestyle of Asia. They can savor the exotic Oriental cuisine in the array of restaurants, and shop in marketplaces filled with unforgettable charm. They can also tour the renowned Sun Moon Lake surrounded by mountains and tea plantations, the National Palace Museum and other cultural attractions.

Enrollment Deadline

Students may now enroll in the program at the MSU Office of Overseas Study, Lifelong Education Programs, 108 International Center. A non-refundable $50 deposit toward program fees is required. The enrollment deadline is April 19, 1985. Students wishing assistance with travel arrangements should contact the Office of Overseas Study by April 1, 1985, as overseas flights require advance reservations. Potential participants are reminded that enrollment is limited so it is wise to reserve a place in the program as soon as possible. Assuming good academic standing, acceptance for the program will be on a first-come, first-serve basis.

Additional Information

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